

IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) An automatic train protection stop (ATPS) device for controlling a train using data communication, comprising:
 - an on-board equipment comprising:
 - a main device having a plurality of circuits for implementing an automatic train stop (ATS) function and an automatic train protection (ATP) function;
 - an on-board antenna integrated with an on-board coil and an oscillator;
 - a rotary type speed detector connected to a shaft of a wheel;
 - an operation information display providing speed information, ground information and operation information;
 - an operation switch for selecting an operation mode;
 - a train controller for controlling a brake of the train; and
 - a communication module for transmitting on-board information and the ground information to a central control system and receiving radio commands from the central control system; and
 - a ground equipment comprising:
 - a K-Balise for transferring a ground information data using an ATS ~~member-beacon~~ connected to a track occupancy detector ~~through-via~~ a narrow space data communication; and
 - a program part for inputting the ground information data to the K-Balise;
- wherein ~~an optimum-a frequency to-for transmitting~~ information from the K-Balise to the on-board equipment is selected by the ~~automatic train protection stop (ATPS) device based on-ground equipment according to an amount of data that is to~~

be transferred and a time period that is available to make the data transfer.

2. (Currently amended) The automatic train protection stop device of claim 1, wherein the main device comprises:

a speed analyzer for converting an output of the speed detector into an actual speed;

a self-applying frequency discriminator having a function of discriminating resonant frequency generated by dynamic reaction of ~~an~~the ATS beacon and an on-ground antenna and constantly providing ~~the~~a self-applying frequency and discriminated current time information;

a target distance controller for receiving a corresponding section information comprising current signal information and rail information[[,]] when the on-board antenna approaches the ground K-Balise₁ and train position and movement distance information so as to constantly calculate and provide a target distance and speed and a secure running speed of the train;

an operation controller for controlling all ~~of~~the operations, providing information related to the operations, selecting ~~an~~the operation mode, setting a wheel diameter, communicating with ~~the~~an exterior device, and monitoring a speed calculation function of the speed analyzer;

an output controller for outputting the speed and current ATS information and contact point information for controlling excessive speed of the train on the basis of ~~the~~a ATP limit speed; and

an electric source converter for changing the electric source of the train into the electric source of the main device.

3. (Previously presented) The automatic train protection stop device of claim 2, wherein the main device further comprises a GPS receiver for providing position

information of the train using GPS.

4. (Previously presented) The automatic train protection stop device of claim 2, wherein the main device comprises an information recording device for recoding and providing fixed and variable information of corresponding sections.

5. (Currently amended) The automatic train protection stop device of claim 2, wherein the main device comprises an interface card which receives and processes international or intercontinental ground signals (track circuit signals) so as to provided the processed information and enables ~~an internal~~ international or intercontinental train control between nations and continents of which signal standards vary.

6. (Previously presented) The automatic train protection stop device of claim 2, wherein the target distance controller comprises:

a microprocessor for receiving various ground signals on the train and calculates the target distance information; target speed information, and limit speed information;

a beacon information having beacon information; and

a decoder for decoding the self-applying frequency discriminated by the self-applying frequency discriminator.

7. (Previously presented) The automatic train protection stop device of claim 1, wherein the on-board antenna integrates the on-board member coil and the oscillator, outputs frequency and voltage variation signals, and transmits the ground information on the track section by establishing a data communication network when approaching the K-Balise.

8. (Previously presented) The automatic train protection stop device of claim 1, wherein the K-Balise modulates the stored information by establishing the data communication network when the on-board antenna approaches the K-Balise and transmits the modulated information to the main device.

9. (Previously presented) The automatic train protection stop device of claim 1, wherein the on-board antenna comprises a demodulator having first and second coils (L1, L2) configured to generate a maximum output at the resonant frequency by connecting an output of a power amplifier and a capacitance (C1) to the first coil, enable to constantly oscillate by connecting the second coil to an input of the amplifier, and decoding the data transmitted at the K-Balise.

10. (Previously presented) The automatic train protection stop device of claim 1, wherein the K-Balise comprises:

a modulator;

a micro control unit;

a click generator;

a storage device for forming a parallel resonant circuit of L3 and C3 so as to be oscillated by the frequency close to the oscillate frequency of the on-board antenna; and

an analysis device for self-testing the operation state of the K-Balise and storing/maintaining the operation records.

11. (Previously presented) The automatic train protection stop device of claim 1, wherein the operation information display comprises a voice output alarm device for providing, in voice alarm, the operator with the speed information and

ground information in a corresponding section using the GPS receiver and information recording device.

12. (Previously presented) The automatic train protection stop device of claim 1, wherein the communication module communicates with the integral control system through a broadband data communication.

13. (Previously presented) The automatic train protection stop device of claim 1, wherein the information recording device comprises one of a USB card and a flash memory card to or from which the fixed and variable information on the ground section can be written or read.

14. (Currently amended) The automatic train protection stop device of claim 4 or claim 13, wherein the fixed information of the ground information recorded in the information recording device comprises data including a rail condition selected from the group consisting of a position of the beacon[],] and a geometrical situation,and the like; and

the variable information of the ground information comprises data including changing on and off information selected from the group consisting of a rail working area and a working area movement.